

**Department of Pesticide Regulation  
Proposed SIP Commitment for San Joaquin Valley**

**Staff Report on the Department of Pesticide Regulation's  
Proposed SIP Commitment for San Joaquin Valley**

## **Department of Pesticide Regulation Proposed SIP Commitment for San Joaquin Valley**

### **Management of Emissions**

DPR will publish an inventory of volatile organic compounds (VOC) emissions from commercial structural and agricultural use of pesticides for each year. If in future years, the measures described below are not sufficient to maintain the inventory at no more than 18.1 tpd in the San Joaquin Valley area, when calculated using the current pesticide VOC emissions estimation methodology, then DPR will use its other authorities to bring emissions back down to that level. The inventory target of 18.1 tpd in the San Joaquin Valley represents a 12% reduction from 1990 emissions, based on the current emissions estimation methodology.

DPR's statutory authorities allow it to quickly obtain further reductions of pesticide emissions if appropriate. DPR can place limitations on the quantity, area, and manner of application to reduce pesticide emissions through restricted materials permit conditions. (Food & Agr. Code, §§ 14006.5; Cal. Code Regs., tit. 3, § 6412.) Permits to use restricted materials are issued by the County Agricultural Commissioner, who has broad discretion to condition the permits on additional use restrictions. DPR has oversight of the permit process and recommends conditions to be included in the Commissioners' permits. (Cal. Code Regs., tit. 3, § 6432.) The Department can also enact use restrictions or permit conditions by regulation. (See Food & Agr. Code, § 14005.) In addition, for products containing a new active ingredient, DPR may place appropriate restrictions on a product's use, including limitations on the quantity, area, and manner of application and require low VOC formulations as a condition of registration. (See Food & Agr. Code, § 12824.)

### **Fumigant Application Method Limits**

Fumigation of the soil prior to planting is a significant portion of agricultural use pesticide VOC emissions in the San Joaquin Valley nonattainment area (SJV). The fumigation method and technology used has a dramatic effect on the rate VOC emissions per pound of fumigant applied. In 2008, the Department of Pesticide Regulation (DPR) implemented regulations that require use of low emitting fumigation methods in SJV. California Code of Regulations, title 3, sections 6447-6452.1. With these restrictions in place, DPR estimates that overall VOC emissions from commercial structural and agricultural use of pesticides in SJV will be no more than 18.1 tons per day (tpd) in a typical year. This proposed commitment would implement the 1994 SIP pesticide element for SJV that was approved in 1997.

### **Restrictions on Use of Non-Fumigant Pesticides**

In 2005, DPR began a formal reevaluation of certain non-fumigant pesticide registrations, a necessary first step to reformulation of pesticides to lower the VOC content and restricting use of products with higher VOC. (Cal. Code Regs., tit. 3, § 6220.) DPR will implement restrictions to reduce VOC emissions from non-fumigant pesticides by 2014. This measure is expected to reduce non-fumigant pesticide VOC emissions in SJV by at least 1.0 tpd in a typical year. In years of typical pesticide use, this measure would provide an added increment of public health protection. In years of unusually high fumigant pesticide use, this measure would help ensure that the inventory target of 18.1 tpd is not exceeded.

### Estimated Emission Reductions

#### Emission Reductions from fumigant pesticide controls in the San Joaquin Valley

(tons per day)	<b>2008</b>	<b>2014</b>	<b>2020</b>	<b>2023</b>
Baseline emissions	19.3	19.3	19.3	19.3
Fumigant controls	1.5	1.5	1.5	1.5

#### Emission Reductions from Non-fumigant pesticide controls in the San Joaquin Valley

(tons per day)	<b>2008</b>	<b>2014</b>	<b>2020</b>	<b>2023</b>
Baseline emissions	19.3	19.3	19.3	19.3
Non-fumigant controls	-	1.0	1.0	1.0

The measure may provide more or less reductions than the amount shown.

#### Timing

Action: 2008

Expected Implementation: 2008 (fumigant) and 2014 (non-fumigant).

#### Staff Proposed SIP Commitment

DPR proposes to use the emissions estimation methodology described in the most recent inventory summary (November 5, 2008 memorandum from Neal to Segawa, pages 2-4) to establish the 1990 pesticide VOC emission levels and evaluate compliance with the 1994 SIP pesticide element for SJV, which was approved in 1997. DPR proposes to implement restrictions on agricultural fumigation methods and VOC emissions of non-fumigant pesticides. In addition, DPR proposes to commit to manage VOC emissions from commercial structural and agricultural pesticide use, to ensure that they do not exceed 18.1 tons-per-day in the SJV area. This measure replaces the pesticide control measure commitment submitted with the 2007 State Strategy.

---

DPR will more thoroughly quantify the emission reductions to be achieved from non-fumigant pesticides as the measure is implemented.

## **Staff Report on the Department of Pesticide Regulation's Proposed SIP Commitment for San Joaquin Valley**

This document provides technical background and explanation supporting the Department of Pesticide Regulation – Proposed SIP Commitment for San Joaquin Valley.

In the 1994 State Implementation Plan (1994 SIP), the California Department of Pesticide Regulation (DPR) committed to reducing reactive organic gas (ROG) emissions from agricultural and structural pesticides in the San Joaquin Valley through voluntary and if necessary, regulatory measures. Through the 1994 SIP, DPR established the commitment to reduce pesticide ROG emissions by 12 percent from the 1990 levels. DPR would primarily pursue voluntary approaches to reducing pesticide ROG emissions, and committed to determining by 1997 whether additional regulatory measures were necessary.

In 1994, pesticide ROG emission estimate methodologies for estimating ROG emissions were in their infancy.<sup>1</sup> DPR recognized that there was a high degree of uncertainty in the estimate and expected that more robust data would be available in the then-near future. Accordingly, DPR revised the baseline emissions estimate, in an August 6, 1999 memorandum from Sanders to Murchison, to account for newly available data on use and ROG content of pesticides.

Since then, DPR has continued to collect data about total pesticide use, the emission potentials of various pesticides, and the impacts that pesticide application methods have on emission levels. As it has collected the additional information, DPR has periodically revised the inventory methodology to reflect the latest data. These frequent methodology and emission potential revisions have resulted in a shifting definition of the absolute value, in tons per day of reductions, of DPR's 1994 SIP pesticide emission reduction commitment.

To provide certainty to U.S. EPA, the regulated community, and the public, DPR is proposing to amend the SIP to define the emission estimation methodology used. This will clarify the absolute goal of the commitment in tons per day reductions. DPR is proposing to use the methodology as described in the most recent inventory summary (November 5, 2008 memorandum from Neal to Segawa, pages 2-4).

Table 1, below, summarizes the 1990 emissions as well as the target emission levels to be achieved in the San Joaquin Valley compared to those same indicators used in the 1994 SIP pesticide element currently approved by U.S. EPA.

---

<sup>1</sup> The pesticide ROG emissions estimate was originally developed by ARB in 1979 and projected to grow over the ensuing decade. However, no documentation of the initial data exists to determine the initial conditions that resulted in this estimate and/or the growth factor used to project these emissions into 1990 levels. At that time DPR estimated that the 1990 pesticide ROG emissions were 62.5 tons per day (tpd) and were expected to grow to 67.9 tpd by 1999 (the year in which DPR's pesticide ROG emission reduction commitment for the San Joaquin Valley was due).

**Table 1**  
**Pesticide ROG Emissions and**  
**Target Emission Levels in the 1994 SIP**  
**For the San Joaquin Valley**

(Summer Season tons per day)

	<b>1994 SIP Baseline Estimate</b>	<b>Estimate using Proposed Methodology</b>
1990 Pesticide ROG Emissions	62.5	20.6
Pesticide ROG Emission Target	55.0	18.1

With this amendment, the underlying goal of the pesticide SIP measure is the same as that approved by U.S. EPA – to reduce pesticide ROG emissions by 12 percent from the 1990 levels. The advantage of this change is that it puts the focus on the reductions needed and the regulations to achieve the reductions as opposed to a focus on changes in the underlying inventory.

Using this emissions estimation methodology as the SIP benchmark for establishing 1990 emissions, DPR will be able to calculate reductions in pesticide ROG emissions that result from future product reformulation, limitation of allowable application methodologies, and other factors affecting pesticide ROG emissions to gauge compliance with the SIP.

#### **Replacement of the 2007 State Strategy Pesticide Emission Reduction Commitment in the San Joaquin Valley**

The 2007 State Strategy for the SIP approved by ARB in September 2007, included a commitment by DPR to reduce pesticide ROG emissions. DPR is proposing to replace that commitment with a new commitment. DPR proposes three key changes to the pesticide element in the 2007 State Strategy. These changes are:

- an update of the pesticide ROG emissions inventory using the methodology just described above,
- a revised pesticide ROG emission reduction commitment that satisfies the 1994 SIP pesticide commitment, and
- a new commitment to reduce non-fumigant pesticide ROG emissions through the transition to low-ROG non-fumigant pesticide formulations.

### Updated Pesticide Emission Estimation

As discussed previously, DPR is proposing: to use the very latest emission estimation methodology to determine compliance with the 1994 SIP commitment; and to use that method for determining compliance from here forward. DPR also proposes to use the same methodology to update the baseline pesticide ROG emissions. Compared to the inventory submitted with the 2007 State Strategy, the change is minor, 0.4 tpd in 1990 and is the result of new data.

### Revised Pesticide Emission Reduction Commitment Benefits and Baseyear Benchmark

When DPR made the commitment to reduce pesticide ROG emissions in the 2007 State Strategy, it was under federal district court order to reduce pesticide emissions based on the court's interpretation of the 1994 SIP commitment. The court order required DPR to adopt and submit to U.S. EPA a regulation to achieve emission reductions of 20 percent from 1991 levels, based on the court's interpretation that the 1994 SIP required a 20 percent reduction instead of a 12 percent reduction. The commitment in the 2007 SIP reflected the court's order.

In the interim, DPR appealed the court's decision. The appeals court ruled in DPR's favor and overturned the district court order. Consequently, DPR is proposing to revise its 2007 State Strategy commitment for the San Joaquin Valley to reduce pesticide ROG emissions to levels at or below the 18.1 tpd target, a level equivalent to a 12 percent reduction from 1990 pesticide ROG emission levels of 20.6 tpd.<sup>2</sup>

In 2008, under the court order that has since been overturned, DPR adopted a regulation restricting allowable fumigant application methods to low-ROG emission methods to meet a 20 percent reduction in pesticide VOC emissions from 1991. Since the court order has been overturned, DPR is proposing to amend the 2008 fumigation regulation to meet the 12 percent commitment specified in the 1994 SIP. DPR estimates that the amended 2008 fumigation regulation will reduce pesticide ROG emissions by 1.5 tpd from typical levels.

### Proposed Commitment to Reduce ROG Emissions from Non-fumigant Pesticides

Reflecting a focus on regulatory actions, DPR is also proposing to add a new commitment to reduce ROG emissions from non-fumigant pesticides used in the San Joaquin Valley. DPR estimates that future measures will reduce ROG emissions from non-fumigant pesticide use in the San Joaquin Valley by 1.0 tpd from current levels. In years with typical pesticide use, these measures would result in an additional increment of air quality progress and public health protection since the fumigant regulations will already bring emissions below the 18.1 tpd target level. In years of higher than usual pesticide use, the non-fumigant restrictions will provide a safety margin, ensuring the San Joaquin Valley remains below the target pesticide ROG levels defined by the 1994 SIP commitment.

---

<sup>2</sup> Accounts for the emission estimation methodology change described previously.

## Overall Impact on the 2007 State Strategy Emission Reduction Commitment

Table 2, below, shows the benefits expected in the San Joaquin Valley from both the 2008 Fumigation Regulation and non-fumigant pesticide controls.

**Table 2**  
**Estimated ROG Emission Reductions**  
**from DPR's Revised Commitment**  
**in the San Joaquin Valley**

	(tons per day)	2008	2014	2020	2023
<b>ROG</b>	Typical Baseline emission levels	19.3	19.3	19.3	19.3
	Emission Reductions from 2008 Fumigation Regulation*	1.5	1.5	1.5	1.5
	Emission Reductions from Non-fumigant Pesticide Controls**	--	1.0	1.0	1.0
	Estimated Remaining Emissions	17.8	16.8	16.8	16.8

\* DPR estimates that, in typical years, the emission reductions from the fumigant regulation would satisfy the target pesticide ROG emission levels of 18.1 tpd, meeting the 1994 SIP commitment to reduce pesticide ROG emissions by 12 percent from 1990 levels.

\*\* These emission reductions are independent of the emission reductions from those achieved by the 2008 fumigant regulation in the San Joaquin Valley and would provide an added measure of security that the target pesticide ROG emission levels of 18.1 tpd is not exceeded in years of unusually high pesticide usage.

The San Joaquin Valley's 2007 8-hour Ozone Plan is California's only 8-hour SIP that relied on the pesticide ROG emission reduction commitment in the 2007 State Strategy for attainment purposes. After accounting for the revised emission estimation methodology, and DPR's regulations, DPR's proposal could result in up to 2.3 tpd greater pesticide ROG emissions than included in the adopted 2007 State Strategy.<sup>3</sup>

The attainment demonstration in the San Joaquin Valley's 2007 Ozone Plan included slightly greater ROG emission reductions from near-term emission control measures than were necessary to demonstrate attainment.<sup>4</sup> ARB did not rely on the emission reduction benefits of the emission reduction measures in the 2007 State Strategy to satisfy any Clean Air Act requirements other than the attainment demonstration. Consequently, DPR's proposal has no impact on the San Joaquin Valley's attainment demonstration or any other SIP requirements.

<sup>3</sup> Calculated as the difference, after accounting for the methodology update, between the target pesticide ROG emissions in the 2007 State Strategy and the proposed revised target pesticide ROG emissions.  $2.3 \text{ tpd} = (20.6 \text{ tpd} * 88\%) - (19.8 \text{ tpd} * 80\%)$

<sup>4</sup> See Table 14: "Meeting the Ozone Emission Reduction Target" in the Air Resources Board's Final Draft Staff Report entitled Analysis of the San Joaquin Valley 2007 Ozone Plan (p.39) available on-line at: [www.arb.ca.gov/planning/sip/2007sip/sanjoaquin/sjv\\_2007\\_plan\\_analysis.pdf](http://www.arb.ca.gov/planning/sip/2007sip/sanjoaquin/sjv_2007_plan_analysis.pdf)

## References

Neal, R. 2008. Update to the Pesticide Volatile Organic Inventory: Estimated Emissions 1990-2006, and Preliminary Estimates for 2007. Memorandum to Randy Segawa dated November 5, 2008. California Department of Pesticide Regulation.

Sanders, J. 1999. Volatile Organic Compound Inventory. Memorandum to Linda C. Murchison dated August 6, 1999. California Department of Pesticide Regulation.